

REMARKS

Claims 13 and 21 have been canceled and new dependent claims 31 and 32 have been added. No new matter was added. Thus, claims 1, 2, 14-20 and 22-32 are pending. Independent claim 1 has been amended to distinguish over the prior art of record. Accordingly, Applicants respectfully submit that the present application is in condition for allowance.

I. Objection to Specification & Claim Rejection - 35 USC §112, First Paragraph

In the non-final Office Action dated March 30, 2009, claims 15 and 16 are the subject of an objection and claims 15-20 are rejected as failing to comply with the enablement requirement.

Claims 14 and 15 have each been amended to depend from claim 2. Thus, claim 15 no longer depends from claim 14.

Accordingly, Applicants respectfully request removal of the objection to the specification and the §112, first paragraph, enablement rejection.

II. Claim Rejections - 35 USC §103(a)

In the non-final Office Action dated March 30, 2009, claims 1, 2 and 13-30 are rejected under 35 USC §103(a) as being obvious over U.S. Patent No. 6,214,631 B1 issued to Burrows et al. in view of JP 01-163704 A

Independent claim 1 of the present application has been amended to include the limitations previously recited in claims 13 and 21. For example, claim 1 requires a step of “arranging a shadow mask to contact the substrate and overlie the organic material other than in the defined areas, at least one of the mask and the substrate having recesses in its surface facing the other of the mask and the substrate”.

In addition, new dependent claim 31 requires that the “mask does not contact said organic material where said mask overlies said organic material at locations corresponding to said

recesses to avoid scraping or gouging of said organic material at said locations” and new dependent claim 32 requires the mask to have the recesses. No new matter was added. For example, see previous versions of claims 13 and 21, see FIG. 1 with the recesses identified with reference numeral “6”, and see page 3, lines 16-20, of the present application, as filed, which states:

“A hard shadow mask 5 having openings corresponding to the regions of the bond pads 3 is placed on the substrate 1. In order to avoid scraping and gouging of the desired polymeric material 4 by the mask 5, the latter has recesses 6 so that it does not actually contact the polymeric material in the region of the arrays 2.”

With respect to the limitations recited in previous claims 13 and 21, the Examiner states in the Office Action that “By virtue of the surface contours that would develop as Burrows carries out his method (see, for example, column 4, lines 14-30 and figure 4) the substrate is considered to have recesses therein that face the shadow mask.” Applicants respectfully disagree with this interpretation of Burrows et al. and respectfully request reconsideration.

Applicants respectfully submit that a proper interpretation of the disclosure of Burrows et al., particularly at column 4, lines 14-30 and FIG. 4 of Burrows et al., is that Burrows et al. fail to disclose recesses as claimed in claims 1, 31 and 32 of the present application.

In addition, it should be understood that the vertical scale shown in FIG. 4 of Burrows et al. is greatly exaggerated as is typical for cross-sections of microelectronic devices. For example, as clearly disclosed on column 13, line 46, to column 14, line 6, of Burrows et al., the thickness of the layers illustrated in FIG. 4 are given in angstroms. For instance, see the referenced thicknesses of 50, 100, 150, 400, 417, 500 and 550 angstroms. In contrast, note that the sides of the triangular apertures (110) in the mask (100) of Burrows et al. are 2.7mm in length. (See column 12, line 53, of Burrows et al.)

Further, Burrows et al. disclose that there is a separation of 12nm to 25nm between the mask and the substrate. See column 12, lines 61-64, of the Burrows et al. patent. For this purpose, Burrows et al. requires the use of a complex precision movement frame illustrated in FIG. 17 of the Burrow et al. patent. See column 12, lines 56-67, for a discussion of the complex precision movement frame.

Accordingly, Applicants respectfully submit that the mask of Burrows et al. does not have recesses. In addition, Applicants respectfully submit that “surface contours” referenced by the Examiner fail to disclose a substrate having recesses (particularly when taking into account the thickness of the layers measured in angstroms relative to the size of the triangular apertures of the mask measured in millimeters, and that the illustration of FIG. 4 of Burrows et al. is greatly exaggerated for ease of illustration purposes and is not drawn for accuracy). Further, the mask of Burrows et al. does not contact the substrate and is separated therefrom with a complex precision movement frame.

Claim 1 of the present application clearly requires the mask to be in contact with the substrate. See mask (5) in FIG. 1 of the present application, as filed, which is clearly in contact with the substrate (i.e., the mask (5) directly contacts layer (4) and is supported against layer (4)). As shown in FIG. 1 of the present application, the mask of the present invention is not required to be supported by a complex precision movement frame; rather, it can directly contact and be supported against the underlying surface of the substrate because of the recesses (6) formed in its surface. The recesses in the surface provide the requisite amount of separation between the mask and material being covered by the mask so that scraping and gouging of areas of the organic material at the locations of the recesses does not occur.

For these reasons, Applicants respectfully submit that Burrows fails to disclose a mask in direct contact with a surface of the underlying substrate and fails to disclose the use of recesses.

In addition, Applicants respectfully submits that Burrows et al. fails to obviate such an arrangement and/or a method utilizing recesses. Further, Applicants respectfully submit that JP ‘704 fails to overcome this deficiency of the Burrows et al. patent.

Accordingly, Applicants respectfully request reconsideration and removal of the §103 obviousness rejection of claims 1, 2, 14-20 and 22-32.

III. Conclusion

In view of the above amendments and remarks, Applicants respectfully submit that the claim rejections have been overcome and that the present application is in condition for allowance. Thus, a favorable action on the merits is therefore requested.

Please charge any deficiency or credit any overpayment for entering this Amendment to our deposit account no. 08-3040.

Respectfully submitted,
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